UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,300	04/09/2004	Paul R. Hinton	05882.0039.CPUS01	1900

27194 7590 12/30/2005

HOWREY LLP
C/O IP DOCKETING DEPARTMENT
2941 FAIRVIEW PARK DRIVE, SUITE 200
FALLS CHURCH, VA 22042-2924

EXAMINER	
CROWDER, CHUN	
ART UNIT	**PAPER NUMBER**
1644	

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/822,300	HINTON ET AL.	
	Examiner	Art Unit	
	Chun Crowder	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/16/2005 and 12/12/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,13 and 15-27* is/are pending in the application.

4a) Of the above claim(s) *17-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *claims 1-8, 13, 15, and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The instant application appears to be in sequence compliance for patent applications containing nucleotide sequence and/or amino acid sequence disclosures, except for the following.

It does not appear that all of the sequences disclosed in the specification as filed are provided with the appropriate SEQ ID NOS. in compliance with the Sequence rules as set forth in 37 CFR 1.821(d).

For example, the Brief Description of the Drawings of Figure 3C on page 11 of the instant specification does not appear to have SEQ ID NOs.

Applicant is required to review the entire instant application for compliance with the Sequence Rules.

2. Applicant's species election without traverse of antibody daclizumab with SEQ ID NOs 118 and 122, amino acid positions 250 and 428 with substitution of Glu and Leu, respectively, filed 11/16/2005 is acknowledged.

Claims 9-12, and 14 have been canceled.
Claims 1, 3, 13, and 15 have been amended.
Claims 1-8, 13, and 15-27 are pending.

Claims 19-27 have been withdrawn from consideration by the Examiner, under 37 C.F.R. 1.142(b), as being drawn to nonelected inventions.

3. Upon further consideration, a new Restriction Requirement of the elected claims is set forth herein.

4. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-8, 13, 15, and 16, drawn to a modified antibody of class IgG, classified in Class 530, subclass 387.1.

II. Claim 17 and 18, drawn to a vector and host cell, classified in Class 435, subclass 320.1; Class 435, subclass 328.

5. Groups I and II are different products. Modified antibody, vector and host cells differ with respect to their structures, physicochemical properties and mode of action. Therefore each product is patentably distinct. They do not share a common structure that is disclosed to be essential to common utility. Further, they require non-coextensive searches in the scientific literature. Therefore, each product is patentably distinct, and searching of these Inventions would impose an undue burden.

6. These inventions are distinct for the reasons given above. In addition, they have acquired a separate status in the art as shown by different classification and/or recognized divergent subject matter. Further, a prior art search also requires a literature search. It is an undue burden for the examiner to search more than one invention. Therefore restriction for examination purposes as indicated is proper.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

8. During a telephone conversation with applicant's representative Joe Liebeschuetz on 12/12/2005, a provisional election was made without traverse to prosecute Group I, **claims 1-8, 13, 15, and 16** of a modified antibody as it reads on elected species of antibody daclizumab with SEQ ID NOs 118 and 122, amino acid positions 250 and 428 with substitution of Glu and Leu. Affirmation to this election must be made by applicant in respond to this Office Action.

Claims 17-27 have been withdrawn from consideration by the Examiner, under 37 C.F.R. 1.142(b), as being drawn to nonelected inventions.

Claims 1-8, 13, 15, and 16, drawn to a modified antibody as it reads on elected species of antibody daclizumab with SEQ ID NOs 118 and 122, amino acid positions 250 and 428 with substitution of Glu and Leu, are currently under consideration.

9. Applicant's claim for domestic priority under 35 U.S.C. 119(e) and 120 is acknowledged. The priority applications upon which benefit is claimed appears to provide adequate support under 35 U.S.C. 112 for subject matter claimed in the instant application.

10. The application is required to be reviewed and all spelling, TRADEMARK, and like error corrected.

Trademarks should be capitalized or accompanied by the ™ or ® symbol wherever they appear and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent application, the proprietary nature of the trademarks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

11. Applicant's IDSs, filed 10/29/2004, 03/10/2005, and 06/07/2005, are acknowledged. Applicant's submission of Search Reports on the IDSs filed 03/10/2005 and 06/07/2005 are acknowledged, however, these citations has been crossed out as they are not appropriate for printing on an issued US Patent.

12. Claim 4 is objected to because of the following informalities: There are two periods. Appropriate correction is required.

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 2, 4, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A) Claims 2, 4 and 15 are indefinite in the recitation of "daclizumab, fontolizumab, visilizumab and M22" because their characteristics are not known. The use of "daclizumab, fontolizumab, visilizumab and M22" as the sole means of identifying the claimed antibodies renders the claim indefinite because "daclizumab, fontolizumab, visilizumab and M22" are merely laboratory designations which do not clearly define the claimed products, since different laboratories may use the same laboratory designation to define completely distinct biological materials.

Amending the claim to recite the appropriate Deposit Accession Numbers or SEQ ID NOs would obviate this rejection.

B) In addition to the rejection set forth above in 14(A), the rejection is set forth if "daclizumab, fontolizumab, visilizumab and M22" are trademarks or trade names.

Claims 2, 4 and 15 contain trademark or trade name "daclizumab, fontolizumab, visilizumab". Where a trademark or trade name is used in a claims as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 USC 112, second paragraph, See Ex parte Simpson, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademarks or the trade names "daclizumab, fontolizumab, visilizumab" are used to identify or describe antibodies accordingly, the identification or the description is indefinite. The relationship between a trademark or trade name and the product it identifies may be uncertain and arbitrary. The formula or characteristics of the product may change from time to time and yet it may continue to be sold under the same trademark or trade name.

C) Applicant is reminded that the amendment must point to a basis in the specification so as not to add any new matter. See MPEP 714.02 and 2163.06.

15. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

16. Claims 2, 4, and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As required elements, the antibodies "daclizumab, fontolizumab, visilizumab and M200" must be known and readily available to the public or obtainable by a repeatable method set forth in the specification. If it is not so obtainable or available, the enablement requirements of 35 USC 112, first paragraph, may be satisfied by a deposit of the appropriate cell lines/hybridomas which produce "daclizumab, fontolizumab, visilizumab and M200". See 37 CFR 1.1801-1.1809.

In addition to the conditions under the Budapest Treaty, applicant is required to satisfy that all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of a patent in US patent applications.

Amendment of the specification to recite the date of the deposit and the complete name and address of the depository is required. As an additional means for completing the record, applicant may submit a copy of the contract with the depository for deposit and maintenance of each deposit.

If the original deposit is made after the effective filing date of an application for patent, applicant should promptly submit a verified statement from a person in a position to corroborate the fact, and should state, that the biological material which is deposited is a biological material specifically identified in the application as filed, except if the person is an attorney or agent registered to practice before the Office, in which case the statement need not be verified. See MPEP 1.804(b).

Further it is noted that the sequence of an entire immunoglobulin satisfies the enablement requirements under 35 USC 112, first paragraph as well.

Note that satisfaction for the enablement of biological materials such as the claimed "daclizumab, fontolizumab, visilizumab and M200" requires the disclosure and recitation of its entire amino acid sequence and not based upon partial sequences.

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claims 1, 3, 5-8, 13, are rejected under 35 U.S.C. 102(b) as being anticipated by Martin et al. (Molecular Cell, 2001, 7:867-877, Reference NO: 68 on IDS filed 10/29/2004) (see entire document) as evidenced by Hinton et al. (JBC, 2004, 279;(8):6213-6216, Reference NO: 55 on IDS filed 10/29/2004) (see entire document).

Martin et al. teach mechanism of pH-dependent binding between the neonatal Fc receptor (FcRn) and IgG Fc (see entire document, especially the Title and Abstract). Specifically, Martin et al. predict that most of the mutations in the Fc region that would enhance IgG Fc binding to FcRn reside near the region predicted to contact FcRn (e.g. see Figure 3 on page 874) including position 250 (e.g. see page 874, right column) and 428 (e.g. see page 875, left column). Further, Martin et al. teach that mutagenesis protocol allowing all possible non-glycine, non-proline amino acid residue substitutions at above mentioned positions would enhance the binding affinity of IgG Fc to FcRn. Furthermore, Martin et al. teach that understanding the mechanism of pH-dependent IgG Fc-FcRn interaction will benefit efforts to design therapeutic antibodies with longer serum half-lives (e.g. see page 875, left column).

As is evidenced by Hinton et al., IgG mutants T250Q and M428L show increased binding to FcRn (see entire document, particularly page 6215, left column) and with an in vivo mean serum clearance rate about 1.8-1.9 fold lower than that of the corresponding unmodified antibody (e.g. see page 6216, left column).

Given the referenced teachings that IgG Fc mutated at position including 250 and 428 would have increased binding affinity to FcRn and longer serum half-life; the claimed functional limitations of in vivo mean serum clearance rate would be inherent properties of the referenced teachings.

Therefore, the reference teachings anticipate the claimed invention.

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. Claims 1-4, 13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Queen et al. (US Patent 5,530,101, Reference NO:9 on IDS filed 10/29/2004) (see entire document) in view of Martin et al. (Molecular Cell, 2001, 7:867-877, Reference NO: 68 on IDS filed 10/29/2004) (see entire document) and Krueger et al. (J. Am. Acad. Dermatol. 2000, 43:448-58) (see entire document).

Queen et al. teach method of making humanized anti-Tac antibody that specifically binds to the IL-2 receptor (see entire document, particularly Example 1 and 2, columns 37-42 and Claim 2). Queen et al. further teach that anti-Tac antibody can be used treating autoimmune disease, organ transplantation and any unwanted response by activated T-cells (e.g. see column 21).

The reference teachings differ from the instant claims by not describing modified antibody daclizumab.

The teachings of making modified antibody by Martin et al. have been discussed, supra.

Krueger et al. teach that Daclizumab is humanized antibody to the α-subunit (CD25) of the IL-2 receptor (see entire document, particular page 448).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to produce antibody daclizumab taught by Queen et al. with modification to enhance their binding to FcRn by substituting amino acid at positions 250 and 428 of the Fc region for prolonged serum half-lives taught by Martin et al.

One of ordinary skill in the art would have been motivated to do so because Queen et al. teach that anti-CD25 antibody has therapeutic effect in treating autoimmune disease, organ transplantation and any unwanted response by activated T-cells and Krueger et al. teach that daclizumab is anti-CD25 antibody; and Martin et al. teach that mutations at Fc region including positions 250 and 428 of an antibody would enhance its binding to FcRn resulting in prolonged serum half-life.

From the teachings of the references, it was apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

21. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

22. Claims 1-8, 13, 15, and 16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 8-12, 19-22, 25-28, 34-43, and 49 of copending USSN: 10/687,118, claims 1-4, 14, and 15 of copending USSN: 11/102, 621, and claims 1-8, 13, 15, and 16 of the copending USSN: 10/966,673.

Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant and copending claims are drawn to same or nearly the same modified antibodies with the same modifications to the heavy chain constant regions for enhancing FcRn binding affinity and/or increasing serum half-life.

Further, although instant claims recite antibodies daclizumab, fontolizumab, visilizumab and M200, they were well known in the art at the time the invention was made. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prolong the serum half-lives of the therapeutic antibodies by mutating amino acids at Fc region to enhance binding to FcRn. The ordinary artisan would have been motivated to do so because mutations at Fc region of an antibody can enhance its binding to FcRn therefore prolong serum half-life.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

23. Claims 1-8, 13, 15, and 16 are directed to an invention not patentably distinct from claims 1-3, 5, 7-10, 12, 13, 15, and 17-19 of commonly assigned copending USSN: 10/966,673 for the reasons stated above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned USSN: 10/966,673, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

24. No claim is allowed.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun Crowder whose telephone number is (571) 272-8142. The examiner can normally be reached Monday through Friday from 8:30 am to 5:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (571) 272-0841. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chun Crowder, Ph.D.
Patent Examiner
December 16, 2005

PHILLIP GAMBEL, PH.D, J.D.
PRIMARY EXAMINER
TECH CENTER 1600
12/20/05